

# CURRICULUM VITAE

## • PERSONAL INFORMATION

Family name, First name: TOMOIAGĂ, Raluca-Bianca

Nationality: Romanian

Affiliation: Enzymology and Applied Biocatalysis Research Center,  
Faculty of Chemistry and Chemical Engineering, Babeş-Bolyai University,  
Str. Arany János, no. 11, Cluj-Napoca, Romania

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Webpage: [Enzymology and Applied Biocatalysis](#)



## • EDUCATION

28 September 2020 – 27 September 2024

PhD studies in Chemistry, Topic: Protein Engineering of Aromatic Ammonia-Lyases  
for the Synthesis of Unnatural Phenylalanine Derivatives

PhD Supervisor: Prof. Dr. Monica-Ioana TOȘA, Assoc. Prof. László Csaba BENCZE  
Faculty of Chemistry and Chemical Engineering, Babeş-Bolyai University, Romania

30 September 2018 – 30 June 2020

Master's Degree, specialisation: Engineering of Organic and Biochemical Processes,  
top of the class (10/10)

Faculty of Chemistry and Chemical Engineering, Babeş-Bolyai University, Romania,

29 September 2014 – 04 July 2018

Bachelor's Degree, specialisation: Biochemical Engineering, top of the class (9.83/10)  
Faculty of Chemistry and Chemical Engineering, Babeş-Bolyai University, Romania

## • WORK EXPERIENCE

07 February 2025 – Current

-*scientific researcher postdoc* within project: Exploring bacterial protein-protein  
interactions for antibiotic research – BACPROBIO, PNRR I8, contract no  
760251/28.12.2023, Faculty of Chemistry and Chemical Engineering, Babeş-Bolyai  
University, Romania Project leader: *Dr. Jürgen Brem*

07 February 2025 – Current

-*scientific researcher postdoc* within project: Advanced (multi)-enzymatic synthesis and  
purification processes for bio-based furan derivatives-ASPIRE, PNRR contract nr.  
760042/23.05.2023, Funding source: Romanian Ministry of Research, Innovation and  
Digitalization; Project leader: *Prof. Dr. Anton Alexandru KISS*

01 March 2024 – 06 February 2025

-*assistant researcher* within project: Exploring bacterial protein-protein interactions  
for antibiotic research – BACPROBIO, PNRR I8, contract no 760251/28.12.2023,  
Faculty of Chemistry and Chemical Engineering, Babeş-Bolyai University, Romania  
Project leader: *Dr. Jürgen Brem*

07 August 2023 – 06 February 2025

-*assistant researcher* within project: Advanced (multi)-enzymatic synthesis and  
purification processes for bio-based furan derivatives-ASPIRE, PNRR contract nr.  
760042/23.05.2023, Funding source: Romanian Ministry of Research, Innovation  
and Digitalization; Project leader: *Prof. Dr. Anton Alexandru KISS*

01 April 2021 – 31 March 2022

-*assistant researcher* within project: Biocatalysis Engineering–Selective Magnetic  
nanoparticles-based Reactor Technology (BE-SMART), PN-III-P2-2.1-PED-2019-  
5031, Funded by: National Research Council - The Executive Agency for Higher

Education, Research, Development and Innovation Funding; Project leader: *Prof. Dr. László POPPE*

01 September 2020 – 31 August 2021

-assistant researcher within project: MIO-enzyme toolkit for the synthesis of non-natural amino acids, PROMYS\_IZ11ZO-166543/1, Funded by: Swiss National Science Foundation (SNF); Project leader: *Assoc. Prof. Dr. Csaba László BENCZE*

## • SCHOLARSHIPS AND AWARDS

February 2024 – April 2024

*Scholarships established by H.G. no. 118/2023* granted by the Romanian Ministry of Education, through the Loans and Scholarships Agency, for research internship at Institute of Chemical and Biological Technology Antonio Xavier (ITQB), Oeiras, Portugal

February 2024 – March 2024

*Doctoral Advanced Scholarship*, provided by the Institute of Advanced Studies in Science and Technology (STAR-UBB), Babeş-Bolyai University/Romania

October 2019 – July 2020

*Special Scholarship for Scientific Activity*, provided by the Institute of Advanced Studies in Science and Technology (STAR-UBB), Babeş-Bolyai University/Romania

April 2023

*Poster Prize Winner*, The 3<sup>rd</sup> NextGenBiocat Symposium, Graz/Austria

## • CONFERENCES and SEMINARS

25-29 September 2023

Computational Approaches to Understanding and Engineering Enzyme Catalysis, Federation of European Biochemical Societies (FEBS) Advanced Course, Zagreb/Croatia

18 – 19 April 2023

The 3<sup>rd</sup> NextGenBiocat Symposium, Graz/Austria

22 – 24 June 2022

RomCat Conference 2022, The 13<sup>th</sup> International Symposium of the Romanian Catalysis Society, Băile Govora/Romania

03 – 07 April 2019

The XVI<sup>th</sup> International Conference Students for Students, Cluj-Napoca/Romania

## • PUBLICATIONS

- Boros, K., Nagy, B.E., Tomoiağă, R.B., Tötös, R., Toşa, M.I., Paizs, C., Bencze, L.C. Fine Tuning Enzyme Activity Assays for Monitoring the Enzymatic Hydrolysis of PET, *Sci. Rep.*, **2025**, 15(1), 1877.
- Tomoiağă, R.B., Ágoston, G., Boros, K., Nagy, L.C., Toşa, M.I., Paizs, C., Bencze, L.C., The Biocatalytic Potential of Aromatic Ammonia-Lyase from *Loktanella atrilutea*, *ChemBioChem*, **2024**, e202400011.
- Boros, K., Gal, L., Gal, C. A., Wäscher, M., Tomoiağă, R. B., Toşa, M. I., Pietruszka, J., Bencze, L. C., Immobilization of D-amino Acid Dehydrogenase from *Ureibacillus thermosphaericus*, *Process Biochemistry*, **2024**, 140, 45-55.
- Tomoiağă, R.B., Ursu, M., Boros, K., Nagy, L.C., Bencze, L.C., Ancestral L-Amino Acid Oxidase: from Substrate Scope Exploration to Phenylalanine Ammonia-Lyase Assay, *Journal of Biotechnology*, **2023**, 377, 43-52.
- Tomoiağă, R.B., Tork, S.D., Filip, A., Nagy, L.C., Bencze, L.C., Phenylalanine Ammonia-Lyases: Combining Protein Engineering and Natural Diversity, *Applied. Microbiology & Biotechnology*, **2023**, 107, 1243-1256.

- Tork, S.D., Nagy, E.Z.A., Tomoiağă, R.B., Bencze, Engineered, Scalable Production of Optically Pure L-Phenylalanines Using Phenylalanine Ammonia-Lyase from *Arabidopsis thaliana*, L.C., *Journal of Organic Chemistry*, **2022**, 88(2), 852–862.
- Boros K., Horváth I., Rotaru C., Tomoiağă R.B., Toşa M.I., Bencze L.C., PETase from *Ideonella sakaiensis*: towards facile bacterial expression system, *Romanian Biotechnological Letters*, **2022**, 28(3), 3507-3516.
- Tomoiağă, R.B.; Tork, S.D.; Horváth, I.; Filip, A.; Nagy, L.C.; Bencze, L.C., Saturation Mutagenesis for Phenylalanine Ammonia Lyases of Enhanced Catalytic Properties, *Biomolecules*, **2020**, 10, 83.

- **WORK RELATED SKILLS AND COMPETENCES**

- *Molecular biology*: cloning techniques, site-directed/saturation mutagenesis, Polymerase Chain Reaction (PCR), gel electrophoresis (agarose), Western Blot.
- *Protein engineering*: rational and semi-rational design (CAST-ing, ISM), high-throughput assays (UV, colorimetric, liquid/solid-phase)
- *Protein characterization*: protein purification techniques, enzymatic kinetic studies, UV-VIS spectroscopy, Fast Protein Liquid Chromatography (FPLC), gel electrophoresis (SDS-PAGE), protein thermal shift assay (DSF/NanoDSF)
- *Biocatalysis*: purified enzyme/whole-cells reactions, enzymatic/chemo-enzymatic cascades (aromatic ammonia-lyases, L-amino acid oxidases, D-amino acid oxidases, L-amino acid deaminases, D-amino acid dehydrogenases, glucose dehydrogenase, decarboxylases) chromatographic separation of chiral/non-chiral compounds - High Performance Liquid Chromatography (HPLC)
- *Computational skills*: Microsoft Office, SnapGene, Pymol, MEGA-X,

- **LANGUAGE SKILLS**

- Mother tongue: Romanian
- Other languages: English (C1), Spanish (B2), German (A2), French (A2)

- **MEMBERSHIPS**

September 2011 – May 2014

-*Member* - The National Red Cross Society of Romania, Baia Mare/Romania